QUALITY ASSURANCE TERMS

Acceptance Criteria: specified limits placed on characteristics of an item, process, or service.

Accepted Reference Value: a numerical quantity that serves as an agreed-upon basis for comparison, and which is derived as: 1) a theoretical or established quantity based on scientific principles, 2) an assigned value, based on experimental work of some recognized organization, or 3) a consensus quantity based on collaborative experimental work under the auspices of a scientific or engineering group.

Accreditation: a formal recognition that an organization (e.g., laboratory) is competent to carry out specific tasks or specific types of tests. The process by which an agency or organization evaluates and recognizes a program of study or an institution as meeting certain predetermined qualifications or standards, thereby accrediting the laboratory.

Accreditation Criterion: a requirement that a laboratory must meet to receive authorization and approval to perform a specified task.

Accredited Laboratory: a laboratory which has been evaluated and given approval to perform a specified measurement or task, usually for a specific property or analyte and for a specified period of time.

Accrediting Authority: the agency having responsibility and accountability for environmental laboratory accreditation and who grants accreditation.

Accuracy: the degree of agreement between an observed value and an accepted reference value. Accuracy includes a combination of random error (precision) and systematic error (bias) components which are due to sampling and analytical operations; a data quality indicator. U.S. EPA recommends that this term not be used and that precision and bias be used to convey the information usually associated with accuracy.

Aerometric Data Analysis & Management (ADAM): is the regulatory and official database that the California Air Resources Board uses to make all regulatory recommendations and decisions related to federal and state standards. All official data in ADAM comes from U.S. EPA's Air Quality System.

Aerometric Information Retrieval System (**AIRS):** information on air releases is contained in AIRS, a computer-based repository for information about air pollution in the United States. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and

provides information about the air pollutants they produce. The information is used by the states to prepare State Implementation Plans, to track the compliance status of point sources with various regulatory programs, and to report air emissions estimates for pollutants regulated under the Clean Air Act.

Air Basin: a land area with generally similar meteorological and geographic conditions throughout. To the extent possible, air basin boundaries are defined along political boundary lines and include both the source and receptor areas. California is currently divided into 15 air basins.

Air District: a political body responsible for managing air quality on a regional or county basis. California is currently divided into 35 air districts.

AIRNOW: U.S. EPA, National Oceanic and Atmospheric Administration, National Park Service, tribal, state, and local agencies developed the AIRNow Web site to provide the public with easy access to national air quality information. The web site offers daily AQI forecasts as well as real-time AQI conditions for over 300 cities across the U.S., and provides links to more detailed state and local air quality Web sites. Information is for the purpose of reporting the AQI only, not to formulate or support regulation, guidance or any other Agency decision or position.

Air Quality and Meteorological Information System (AQMIS): a database which includes a hybrid of real-time and official air quality data. The official data comes from ADAM. AQMIS also has real-time and historical meteorological data.

Air Quality Index (AQI): issued by the U.S. EPA for daily air quality reporting to the public. The index is designed to provide accurate, timely, and easily understandable information about daily levels of air pollution. The higher the AQI value, the greater the level of air pollution and the greater the health concern.

Air Quality System (AQS): contains ambient air pollution data collected by U.S. EPA, state, local, and tribal air pollution control agencies from thousands of monitoring stations. AQS also contains meteorological data, descriptive information about each monitoring station (including its geographic location and its operator), and data quality assurance/quality control information.

Air Toxics: a generic term referring to harmful chemicals or group of chemicals in the air. Substances that are especially harmful to health, such as those considered under U.S. EPA's Hazardous Air Pollutant Program or California's AB 1807 and/or AB 2588 Air Toxics Programs, are considered to be air toxics. Technically, any compound that is in the air and has the potential to produce adverse health effects is an air toxic.

Ambient Air: any unconfined portion of the atmosphere or open air. Often used interchangeably with "outdoor air."

Ambient Air Quality Standards (AAQS): health and welfare based standards for outdoor air which identify the maximum acceptable average concentrations of air pollutants during a specified period of time.

American Society for Testing and Materials (ASTM): a non-profit organization that provides a forum for producers, consumers, and representatives of government and industry to write laboratory test standards for materials, products, systems, and services. ASTM publishes standard test methods, specifications, practices, guides, classifications, and terminology.

Analysis (chemical): the determination of the qualitative and/or quantitative composition of a substance.

Annual Network Report: federal regulations require that the air quality monitoring network be reviewed annually to identify any need for additions, relocations, or terminations of monitoring sites or instrumentation. The Annual Network Report covers the monitoring network for 23 of the 32 air districts within ARB's Primary Quality Assurance Organization. The report must be submitted to the U.S. EPA. Twelve local air agencies in California that operate monitoring sites are reporting separately on the ambient monitoring within their jurisdictions.

Approved Regional Method (ARM): a continuous PM2.5 method that has been approved specifically within a state or local air monitoring network for purposes of comparison to the NAAQS and to meet other monitoring objectives.

Area-Wide: all monitors sited at neighborhood, urban, and regional scales, as well as those monitors sited at either micro- or middle-scale that are representative of many such locations in the same Core Based Statistical Area.

Arithmetic Mean: the sum of all the values of a set of measurements divided by the number of values in the set, usually denoted by x; a measure of central tendency.

Assessment: the evaluation process used to measure the performance or effectiveness of a system and its elements, used to denote any of the following: audit, performance evaluation, management systems review, peer review, inspection, or surveillance.

Attainment Area: a geographical area identified to have air quality as good as or better than, the National and/or California Ambient Air Quality Standards (NAAQS/CAAQS). An area may be an attainment area for one pollutant and a nonattainment area for others.

Audit: a systematic evaluation to determine the conformance to quantitative specifications of some operational function or activity.

Audit of Data Quality: a qualitative and quantitative evaluation of the documentation and procedures associated with environmental measurements to verify that the resulting data are of acceptable quality.

Background Level: the concentration of substance in a defined control area during a fixed period of time before, during, or after a data gathering operation.

Bias: the systematic or persistent distortion of a measurement process which deprives the result of representativeness (i.e., the expected sample measurement is different than the sample's true value). A data quality indicator.

Calibrate: to determine, by measurement or comparison with a standard, the correct value of each scale reading on a meter or other device, or the correct value for each setting of a control knob. The levels of the calibration standards should bracket the range of planned measurements.

Calibration Curve: the graphical relationship between the known values for a series of calibration standards and instrument responses.

Calibration Drift: the difference between the instrument response and a reference value after a period of operation without recalibration.

California Air Pollution Control Officers Association (CAPCOA): a nonprofit association of the air pollution control officers from all 35 air quality agencies throughout California. CAPCOA was formed in 1975 to promote clean air and to provide a forum for sharing of knowledge, experience, and information among the air quality regulatory agencies around the state. CAPCOA is an organization of air quality professionals, leaders in their field, who promote unity and efficiency and strive to encourage consistency in methods and practices of air pollution control.

California Air Response Planning Alliance (CARPA): ad hoc organization focused on coordinating response to major air releases and other emergencies with air quality impacts.

California Ambient Air Quality Standard (CAAQS): a legal limit that specifies the maximum level and time of exposure in the outdoor air for a given air pollutant and which is protective of human health and public welfare. CAAQSs are recommended by the Office of Environmental Health Hazard Assessment and adopted into regulation by the ARB and are the standards which must be met per the requirements of the California Clean Air Act.

Certification: the process of testing and evaluation against specifications designed to document, verify, and recognize the competence of a person, organization, or other entity to perform a function or service usually for a specified time.

Certification of Data Quality: the real-time assessment of environmental data collection activities (e.g., sampling design, sampling, sample handling, chemical analysis, data

reduction, etc.) to ensure that they have been carried out in accordance with requirements and that the results meet the defined quality criteria.

Certified Reference Material: a reference material that has one or more of its property values established by a technically valid procedure and is accompanied by or traceable to a certificate or other documentation issued by a certifying body.

Chain-of-Custody: an unbroken trail of accountability that insures the physical security of samples, data, and records.

Clean Air Act (CAA): the federal law passed in 1970, and last amended in 1990, which forms the basis for the national air pollution control effort. Basic elements of the act include national ambient air quality standards for major air pollutants, hazardous air pollutants standards, state attainment plans, motor vehicle emissions standards, stationary source emissions standards and permits, acid rain control measures, stratospheric ozone protection, and enforcement provisions.

Clean Air Status and Trends Network (CASTNET): a national air quality monitoring network designed to provide data to assess trends in air quality, atmospheric deposition, and ecological effects due to changes in air pollutant emissions. Launched in 1991 by the landmark Clean Air Act amendments to track long-term trends in acid rain pollutants as well as rural ozone, a component of smog.

CO: carbon monoxide.

Coefficient of Variation: a measure of relative dispersion (precision). It is equal to the ratio of the standard deviation divided by the arithmetic mean.

Collocated Sample: one of two or more independent samples collected so that each is equally representative for a given variable at a common space and time.

Collocated Samplers: two or more identical sample collection devices, located together in space and operated simultaneously, to supply a series of duplicate or replicate samples for estimating precision of the total measurement system/process.

Comparability: the degree to which different methods, data sets and/or decisions agree or can be represented as similar; a data quality indicator.

Compatibility: ability of entities to be used together under specific conditions to fulfill relevant requirements.

Completeness: the amount of valid data obtained from a data collection project compared to the planned amount needed to meet the data quality objectives. Usually expressed as a percentage. A data quality indicator.

Confidence Coefficient: the probability statement that accompanies a confidence interval and is equal to unity minus the associated type **I** error rate (false positive rate). A confidence coefficient of 0.90 implies that 90 percent of the intervals resulting from repeated sampling of a population will include the unknown (true) population parameter.

Confidence Interval: the numerical interval constructed around a point estimate of a population parameter, combined with a probability statement (the confidence coefficient) linking it to the population's true parameter value. If the same confidence interval construction technique and assumptions are used to calculate future intervals, they will include the unknown population parameter with the same specified probability.

Control Limit: a specified boundary on a control chart that, if exceeded, indicates a process is out of statistical control, and the process must be stopped, and corrective action taken before proceeding (e.g., for a Shewhart chart, the control limits are the mean plus and minus three standard deviations).

Core Based Statistical Area (CBSA): a U.S. geographic area defined by the Office of Management and Budget which includes both Metropolitan Areas (at least one urban area with a population of 50,000 or more) and Metropolitan Statistical Areas (at least one urban area with a population of 10,000 to less than 50,000).

Corrective Action: an action taken to eliminate the causes of an existing nonconformance, deficiency, or other undesirable situation in order to prevent recurrence.

Correlation: a measure of association between two variables. See also Correlation Coefficient.

Correlation Coefficient: a number between -1 and 1 that indicates the degree of linearity between two variables or sets of numbers. The closer to -1 or + 1, the stronger the linear relationship between the two (i.e., the better the correlation). Values close to zero suggest no correlation between the two variables. The most common correlation coefficient is the product-moment, a measure of the degree of linear relationship between two variables.

Critical Criteria: specific parameters, conditions, or levels associated with air measurements that must be met to obtain desired results, such as valid data.

Criteria Pollutants: an air pollutant for which acceptable levels of exposure can be determined and for which an ambient air quality standard has been set. Examples include: ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, and particulate matter (PM10 and PM2.5). The term "criteria air pollutants" derives from the requirement that the U.S. EPA must describe the characteristics and potential health and welfare effects of these

pollutants. The U.S. EPA and ARB periodically review new scientific data and may propose revisions to the standards as a result.

Data of Known Quality: data are of known quality when the qualitative and quantitative components associated with their derivation are documented appropriately for their intended use, and such documentation is verifiable and defensible.

Data Management System (DMS) and Data Acquisition Systems (DAS): systems that collect, store, summarize, report, print, calculate, and transfer data. The transfer is usually from an analog or digital format to a digital medium.

Data Quality: the totality of features and characteristics of data that bears on their ability to satisfy a given purpose; the sum of the degrees of excellence for factors related to data.

Data Quality Assessment (DQA): the statistical evaluation of a data set to establish the extent to which it meets user-defined application requirements (i.e., DQOs).

Data Quality Indicators (DQI): quantitative statistics and qualitative descriptors that are used to interpret the degree of acceptability or utility of data to the user. The principal data quality indicators are bias, precision, accuracy (precision and bias are preferred), comparability, completeness, and representativeness.

Data Quality Objective (DQO): qualitative and quantitative statements of the overall level of uncertainty that a decision-maker is willing to accept in results or in decisions derived from environmental data. DQOs provide the statistical framework for planning and managing environmental data operations consistent with the data user's needs.

Data Quality Objectives Process: a systematic planning tool based on the scientific method that identifies and defines the type, quality, and quantity of data needed to satisfy a specified use.

Data Review: the systematic evaluation of achieved quality control results to establish if the samples and/or measurements performed on them meet specified acceptance criteria, for the purpose of determining whether or not the affected results may or may not be used or should be qualified.

Data Set: all the observed values for the samples in a test or study; a group of data collected under similar conditions and which, therefore, can be analyzed as a whole.

Data Validation: follows the data verification process and ascertains the usability of the data based on measurement quality objectives to ensure results are scientifically defensible.

Data Verification: the systematic process of evaluating performance and compliance of data by ascertaining its completeness, correctness, and consistency.

Decision Error: applying incorrect or erroneous data in choosing between alternatives, resulting in making the wrong selection.

Defensible: the ability to withstand any reasonable challenge related to the veracity or integrity of procedures, documents, and derived data.

Design Value: the calculated concentration according to the applicable appendix of 40 CFR Part 50 for the highest site in an attainment or nonattainment area.

Detection Limit: the lowest concentration or amount of the target analyte that can be determined to be different from zero by a single measurement at a stated level degree of confidence.

Environmental Justice (EJ): the fair treatment of people of all races and incomes with respect to development, implementation, and enforcement of environmental laws, regulations, and policies.

Equivalent Method: any method of sampling and/or analysis demonstrated to result in data having a consistent and quantitatively known relationship to the results obtained with a reference method under specified conditions, and formally recognized by the U.S. EPA.

Exceptional Events: means an event that affects air quality, is not reasonably controllable or preventable, is an event caused by human activity that is unlikely to recur at a particular location or a natural event, and is determined by the Administrator in accordance with 40 CFR Part 50.14 to be an exceptional event.

Federal Equivalent Method (FEM): method for measuring ambient concentrations of specified air pollutants that have been designated as "equivalent methods" in accordance with 40 CFR Part 53. Subject to any limitations (e.g., operating range or temperature range) specified in the applicable designation, each method is acceptable for use in state or local air quality surveillance systems under 40 CFR Part 58 unless the applicable designation is subsequently canceled.

Federal Reference Method (FRM): method for measuring ambient concentrations of specified air pollutants have been designated as "reference methods" in accordance with 40 CFR Part 53. Subject to any limitations (e.g., operating range or temperature range) specified in the applicable designation, each method is acceptable for use in state or local air quality surveillance systems under 40 CFR Part 58 unless the applicable designation is subsequently canceled.

Flag: to qualify or signal that an item does not meet specified requirements.

Flow Rate: the quantity-per-unit time of a substance passing a point, plane, or space; for example the volume or mass of gas or liquid emerging from an orifice, pump, or turbine or moving through a point in a conduit or channel.

Geometric Mean: a type of mean or average, which indicates the central tendency or typical value of a set of numbers by using the product of their values.

Hazardous Air Pollutants (HAPs): defined under the Clean Air Act as pollutants that cause or may cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental and ecological effects. Currently, the Clean Air Act regulates 188 chemicals and chemical categories as HAPs.

Holding Time: the period a sample may be stored prior to its required analysis. While exceeding the holding time does not necessarily negate the veracity of analytical results, it causes the qualifying or flagging of the data for not meeting all of the specified acceptance criteria. The maximum times that samples may be held prior to analysis and still be considered valid.

Interagency Monitoring of Protected Visual Environments (IMPROVE): an extensive long term monitoring program established to determine current air visibility conditions, track changes in visibility, and determine causal mechanism for the visibility impairment in the National Parks and Wilderness Areas.

Metadata: a type of data that describes and defines other data, such as the content, quality, and condition of data.

Method: a body of procedures and techniques for performing a task (e.g., sampling, characterization, quantification) systematically presented in the order in which they are to be executed.

Method Detection Limit (MDL): the minimum concentration of an analyte that, in a given matrix and with a specific method, has a 99 percent probability of being identified, qualitatively or quantitatively measured, and reported to be greater than zero.

Meteorological Measurements: measurements of wind speed, wind direction, barometric pressure, temperature, relative humidity, solar radiation, ultraviolet radiation, and/or precipitation.

Microscale: concentrations in air volumes from several meters up to 100 meters.

Middle Scale: concentrations in air volumes from 100 meters up to about 0.5 Km.

Monitor: an instrument, sampler, analyzer, or other device that measures or assists in the measurement of atmospheric air pollutants and which is acceptable for use in ambient air surveillance under the applicable provisions.

Monitoring Objective: an ambient air monitoring network must be designed to meet three basic federal monitoring objectives: 1) to provide air quality data to the public in a timely manner; 2) to support compliance with national air quality standards; and 3) to support air quality research studies.

Monitoring Organization: a state, local, or other monitoring organization responsible for operating a monitoring site for which the quality assurance regulations apply.

Multipoint Calibration: the determination of correct scale values by measuring or comparing instrument responses at a series of standardized analyte concentrations. Used to define the range for generating quantitative data of acceptable quality.

National Air Toxics Trends Stations (NATTS): this network provides ambient hazardous air pollution data.

National Ambient Air Quality Standards (NAAQS): set standards for wide-spread pollutants (also called "criteria" pollutants) that were considered harmful to the public and environment. The six principal pollutants are carbon monoxide, lead, nitrogen dioxide, PM10, PM2.5, ozone, and sulfur oxides.

National Core Multi-pollutant Monitoring Stations (NCore): monitors at these sites are required to measure particles (PM2.5, speciated PM2.5, PM10-2.5), O3, SO2, CO, nitrogen oxides (NO/NO2/NOy), Pb, and basic meteorology.

National Institute of Standards and Technology (NIST): provide standard reference materials used to confirm the accuracy and traceability of standards for calibrating instrumentation used to measure atmospheric concentrations of air pollutants.

Near-Road Monitoring: ambient monitoring conducted at the location of maximum NO2 concentrations in an area, with a focus on characterizing those attributable to mobile source emissions. It is required to support the revised NO2 NAAQS; however, the EPA believes that these near-road monitoring stations will create the infrastructure to accommodate other pollutant measurements.

Neighborhood Scale: concentrations in air volumes from 0.5 Km to 4 Km.

Network: an air monitoring network is comprised of certain categories of monitoring stations (e.g., SLAMS, NCORE, SPM, and PAMS) that have specific sampling objectives and requirements.

NH3: ammonia.

Nonattainment Area: a geographic area identified by the U.S. EPA and/or ARB as not meeting either NAAQS or CAAQS standards for a given pollutant.

NO2: nitrogen dioxide. NO means nitrogen oxide. NOx means oxides of nitrogen and is defined as the sum of the concentrations of NO2 and NO.

NOy: the sum of all total reactive nitrogen oxides, including NO, NO2, and other nitrogen oxides referred to as NOx.

O3: ozone.

Operational Criteria: quality control tasks that if not met indicates potential problem with the data.

Ozone (O3) Generator: when a transfer standard or gas calibrator is used to calibrate an O3 monitor at a field site, an ultraviolet (photolytic) O3 generator is needed to provide the required O3 concentrations. The O3 generator must produce very stable concentrations of O3 (preferably less than ± 2% change per hour).

PAMS: photochemical assessment monitoring stations.

Particulate Matter (PM): a criteria pollutant of unspecified size range which includes dust, soot and other tiny bits of solid materials that are released into the air.

Pb: lead.

Performance Evaluation Audit: a type of audit in which the quantitative data generated in a measurement system are obtained independently and compared with routinely obtained data to evaluate the proficiency of an analyst or laboratory.

Performance Evaluation Sample (PE sample): a sample, the composition of which is unknown to the analyst and is provided to test whether the analyst/laboratory can produce analytical results within specified performance limits.

PM2.5: particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.

PM10: particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.

PM10-2.5: particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers and greater than a nominal 2.5 micrometers.

Precision: the degree to which a set of observations or measurements of the same property, usually obtained under similar conditions, conform to themselves; a data quality indicator. Precision is usually expressed as standard deviation, variance, or range, in either absolute or relative terms.

Prevention of Significant Deterioration (PSD) Station: any station operated for the purpose of establishing the effect on air quality of the emissions from a proposed source for purposes of prevention of significant deterioration as required by Section 51.24(n) of 40 CFR Part 58.

Primary Quality Assurance Organization (PQAO): a monitoring organization or other organization that is responsible for a set of stations that monitor the same pollutant and for which data quality assessments can be pooled. Each criteria pollutant sampler/monitor at a monitoring station in the SLAMS and SPM networks must be associated with one, and only one, primary quality assurance organization.

Primary Standards: federal air quality standards set to protect public health, including the most sensitive individuals in the population.

Probe: the actual inlet where an air sample is extracted from the atmosphere for delivery to a sampler or point analyzer for pollutant analysis.

Quality Assurance (QA): an integrated system of activities involving planning, quality control, quality assessment, reporting, and quality improvement to ensure that a product or service meets defined standards of quality with a stated level of confidence.

Quality Assurance Assessment: the evaluation of environmental data comprised of data validation/verification and data quality assessment, to establish whether they meet the quality criteria needed for a specific application.

Quality Assurance Objectives: the limits on bias, precision, comparability, completeness, and representativeness defining the minimal acceptable levels of performance as determined by the data user's acceptable error bounds.

Quality Assurance Project Plan (QAPP): a formal document describing the detailed quality control procedures by which the quality requirements defined for the data and decisions pertaining to a specific project are to be achieved.

Quality Control (QC): the overall system of technical activities whose purpose is to measure and control the quality of a product or service so that it meets the needs of users. The aim is to provide quality that is satisfactory, adequate, dependable, and economical.

Quality Control Sample: an uncontaminated sample matrix spiked with known amounts of analytes from a source independent from the calibration standards. It is generally used to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system.

Quality Management Plan (QMP): a formal document describing the management policies, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan of an agency, organization or laboratory for ensuring quality in its products and utility to its users.

Quality System: a structured and documented management system describing the policies, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan of an organization for ensuring quality in its work processes, products (items), and services. The quality system provides the framework for planning, implementing, and assessing work performed by the organization and for carrying out required QA and QC.

Quantitation Limits: the maximum or minimum levels or quantities of a target variable that can be quantified with the confidence level required by the data user.

Reference Method: a sampling and/or measurement method which has been officially specified by an organization as meeting its data quality requirements.

Regional Administrator: the Administrator of one of the ten U.S. EPA Regional Offices or his or her authorized representative.

Regional Scale: concentrations in rural air volumes from tens to hundreds of Km.

Reporting Organization: an entity, such as a state, local, or tribal monitoring agency that collects and reports air quality data to U.S. EPA.

Residence Time: the time it takes for air to move from the sampling inlet to each analyzer.

Secondary Standards: federal air quality standards set to protect the environment, including agricultural crops, vegetation, wildlife, livestock, and property.

Site: a geographic location where one or more stations may be at the same site.

Siting: factors considered when evaluating a monitoring station that could negatively impact data quality, such as obstructions (trees, buildings, etc.).

State or Local Air Monitoring Stations (SLAMS): make up the ambient air quality monitoring sites that are primarily needed for NAAQS comparisons, but may serve other data purposes. SLAMS exclude special purpose monitor stations and include NCore,

PAMS, and all other state or locally operated stations that have not been designated as SPM stations.

SO2: sulfur dioxide.

Soot: very fine carbon particles that have a black appearance when emitted into the air.

Spatial Network Design: number and location of monitors.

Special Purpose Monitor (SPM): a monitor included in an agency's monitoring network that the agency has designated as a special purpose monitor station in its monitoring network plan and in the Air Quality System, and which the agency does not count when showing compliance with the minimum requirements of 40 CFR Part 58 Subpart C for the number and siting of monitors of various types.

Speciation Trends Network (STN) Station: network provides chemical species data of fine particulate matter (PM2.5).

Standard Deviation: the most common measure of the dispersion or imprecision of observed values expressed as the positive square root of the variance. See Variance.

Standard Operating Procedure (SOP): a written document which details the method of an operation, analysis, or action whose techniques and procedures are thoroughly prescribed and which is accepted as the method for performing certain routine or repetitive tasks.

State Implementation Plan (SIP): a plan prepared by states and submitted to U.S. EPA describing how each area will attain and maintain national ambient air quality standards. SIPs include the technical foundation for understanding the air quality (e.g., emission inventories and air quality monitoring), control measures and strategies, and enforcement mechanisms.

Station: a single monitor, or a group of monitors with a shared objective, located at a particular site.

Technical Systems Audit (TSA): a thorough, systematic on-site, qualitative review of facilities, equipment, personnel, training, procedures, record keeping, data validation, data management, and reporting aspects of a total measurement system.

Total Suspended Particulates (TSP): particulate matter as measured by the method described in 40 CFR Part 50 Appendix B.

Traceability: an unbroken trail of accountability for verifying or validating the chain-of-custody of samples, data, the documentation of a procedure, or the values of a standard. The ability to trace the history, application or location of an entity by means of

recorded identifications. The property of a result of a measurement whereby it can be related to appropriate standards, generally international or national standards, through an unbroken chain of comparisons.

Ultrapure Air: a gas that has impurity concentration below 0.01 ppm for hydrocarbons and carbon monoxide and below 0.001 ppm for nitrogen oxides and sulfur dioxide.

Uncertainty: a measure of the total variability associated with a process that includes the two major error components: systematic error (bias) and random error (imprecision).

Urban Scale: concentrations in air volumes from 4 to 50 Km.

Validation: the process of substantiating specified performance criteria. Confirmation by examination and provision of objective evidence that the particular requirements for a specific intended use are fulfilled.

Variance: measures how far a set of numbers are spread out. A small variance indicates that the data points tend to be very close to the mean (expected value) and hence to each other, while a high variance indicates that the data points are very spread out from the mean and from each other. The square root of variance is called the standard deviation.

Verification: confirmation by examination of objective evidence that specified requirements have been fulfilled. The process of examining the results of a given activity to determine conformance to the stated requirements.

VOC: volatile organic compounds.

Zero Air: a gas that has an impurity concentration below the minimum detection limit of the analytical instrument. This gas is used for both instrument calibration and component testing.

Zero Check: a standard, usually devoid of the analyte or variable of interest, used to establish whether the zero point of a measurement method is still properly calibrated.

Zero Drift: the change in instrument output over a stated time period of non-recalibrated, continuous operation, when the initial input concentration is zero; usually expressed as a percentage of the full scale response.

References

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2. Code of Federal Regulations Title 40, Part 50
3. Code of Federal Regulations Title 40, Part 53
4. Code of Federal Regulations Title 40, Part 58
5. Quality Assurance Handbook for Air Pollution Measurement Systems Volume II
6. Title 17, California Code of Regulations, Section 70100 Definitions
7. U.S. EPA Glossary of Quality Assurance Terms and Related Acronyms
8. U.S. EPA QA Glossary
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